

What is claimed is:

1. A portable multi-functional electrochemical biosensor system, comprising:

a plurality of sample cells, each sample cell having a reaction zone on which a substance is placed to react with a corresponding selected analyte and having at least two independent electrodes which are not connected to each other, wherein one of the two electrodes is a reference electrode, and the other is an working electrode, when a detective reaction occurs, the electrodes output an electrochemical reaction signal;

a plurality of pluggable information memories, corresponding to the sample cells, respectively, during detection, each corresponding pluggable information memory being able to provide parameters used for analyzing the concentration of the corresponding selected analyte; and

a multi-functional signal analysis processor, having a microprocessor, an electrically erasable programmable read/write memory and an environmental temperature sensor, the multi-functional signal analysis processor having at least two input terminals which are connected to the sample cell and the pluggable information memory, respectively, and when an electrochemical reaction occurs, the microprocessor transferring the parameters from the pluggable information to the electrically erasable programmable read/write memory so that the concentration of the selected analyte is calculated by using the electrochemical reaction signal output from the sample cell and the parameters provided by the electrically erasable programmable read/write memory, with cooperation of temperature compensation established by the environmental temperature sensor, and then output;

wherein the biosensor system uses a set of sample cell and pluggable information memory to detect the concentration of a corresponding selected analyte, thereby detecting the concentration for various selected analytes.
2. The biosensor system as claimed in claim 1, wherein the pluggable information memory is an electrically erasable programmable read-only memory (EEPROM).
3. The biosensor system as claimed in claim 1, wherein the parameters

stored in the pluggable information memory comprises a start threshold, the type of the selected analyte, detection steps, detection timing, a temperature compensation and a method for calculation, which are provided for the use of the multi-functional signal analysis processor to calculate the concentration of the selected analyte.

4. The biosensor system as claimed in claim 1, wherein the pluggable information memory further stores a parameter check-sum code, and before the detection is performed by the multi-functional signal analysis processor, the multi-functional signal analysis processor transfers the parameters and the parameter check-sum code of the pluggable information memory to the electrically erasable programmable read/write memory to determine whether or not the parameters are consistent with the parameter check-sum code, thereby confirming the correction of the transferred parameters.
5. The biosensor system as claimed in claim 1, wherein the reference electrode of the sample cell is grounded, and the working electrode of the sample cell is provided with a reference potential and has a signal amplified via an amplifier and a feed-back resistor, and during the detection, the electrochemical reaction signal output from the working electrode is sent to the multi-functional signal analysis processor for calculating the concentration of the selected analyte
6. The biosensor system as claimed in claim 1, wherein the multi-functional signal analysis processor comprises an gain adjustable amplifier, the reverse input terminal of which is connected to the working electrode, and the processor reasonably amplifies the signal of the working electrode via the gain adjustable amplifier to increase resolutions by the use of the parameters of the pluggable information memory, cooperating with the corresponding selected analyte.
7. The biosensor system as claimed in claim 1, wherein the microprocessor of the multi-functional signal analysis processor applies a constant potential to the working electrode, after the selected analyte is reacted with a reactant, the microprocessor stops applying the constant potential, after a detection waiting time designated by the information memory, the microprocessor further applies a constant potential to the working electrode to establish an electrochemical reaction condition, at this time, the working electrode outputs the electrochemical reaction signal, after a

power supply reaction time designated by the information memory passes by, the amplitude of the signal is detected, and the concentration of the selected analyte is calculated by the parameter for calculation designed by the information memory and then output.

8. A portable multi-functional electrochemical biosensor system, comprising:

a plurality of sample cells, each sample cell having a reaction zone on which a substance is placed to react with a corresponding selected analyte and having at least two independent electrodes which are not connected to each other, wherein one of the two electrodes is a reference electrode, and the other is an working electrode, and when a detective reaction occurs, the electrodes output an electrochemical reaction signal;

a plurality of pluggable information memories, corresponding to the sample cells, respectively, during detection, each corresponding pluggable information memory being able to provide parameters used for analyzing the concentration of the corresponding selected analyte; and

a multi-functional signal analysis processor, having a microprocessor, an electrically erasable programmable read/write memory and an environmental temperature sensor, the multi-functional signal analysis processor having at least two input terminals which are connected to the sample cell and the pluggable information memory, respectively, and when an electrochemical reaction occurs, the microprocessor transferring the parameters from the pluggable information memory to the electrically erasable programmable read/write memory so that the concentration of the selected analyte is calculated by using the electrochemical reaction signal output from the sample cell and the parameters provided by the electrically erasable programmable read/write memory, with cooperation of temperature compensation established by the environmental temperature sensor, and then output;

a status detector, having two independent electrodes which are connected to a resistor with a constant resistance, and to the sample cell of the multi-functional signal analysis processor, and whether the status of the multi-functional signal analysis processor is normal is based on whether the resistance of the resistor detected by the multi-functional signal analysis processor conforms to the built-in resistance of the processor;

Wherein the biosensor system uses a set of sample cell and pluggable information memory to detect the concentration of a corresponding selected analyte, thereby detecting the concentrations for various selected analytes.